

Fostoria; mean of maximum temperatures, 88°.7; mean of minimum temperatures, 53°.9.

Average number of clear days, 12.3; average number of fair days, 12.3; average number of cloudy days, 6.4; average number of days on which rain fell, 11.6.

Mean depth of rainfall, 3.53 inches; mean daily rainfall, 0.114 inch; day of greatest rainfall, 31st.

Days without rainfall, 1st, 15th, 28th.

Warmest day, 9th; coldest day, 28th.

Prevailing winds, south and southwest.

NOTES AND EXTRACTS.

FOG PREDICTIONS FOR THE BANKS OF NEWFOUNDLAND.

[By Sergeant E. B. GARRIOTT, Signal Corps.]

This subject was briefly discussed in the MONTHLY WEATHER REVIEW of March and April, 1887. Shipmasters have generally responded to requests for special reports relative to fog-banks, and data received has admitted of fuller and more satisfactory investigations in connection with these phenomena.

The atmospheric conditions requisite to the development of fog are too well known to require discussion; suffice it to say that these conditions are more marked and more frequently exist over the Banks of Newfoundland than in any other locality within the usual routes of travel. The prevailing winds in this region are westerly, and the differences in temperature between air drawn from the continent and that which overlies the ice-fields and the cold Arctic currents are not, as a rule, sufficiently great to cause a large precipitation of fog-atoms. It is therefore evident that the denser fog formations are due to meteorological conditions whereby greater ranges in air temperatures are occasioned. The element of cold air is constant in this region and the opposing element of warm air is ever present over the ocean to the southward and over the Gulf Stream which flows from the southwestward over the southern edge of the Banks. The causes which influence the flow of warm air from the southward and from over the Gulf Stream are necessarily due to meteorological conditions whereby the prevailing westerly winds are diverted to the southern or eastern quadrants. The causes whereby these conditions are developed are traceable to cyclonic areas which pass eastward over the ocean from the continent. All reports of fog encountered in the vicinity of the Banks verify these conclusions, and it now remains to determine how this knowledge can best be utilized for the benefit of shipmasters.

For purposes of fog predictions it is advisable to consider only the storms which leave the American coast north of the thirty-fifth parallel, both by reason of the fact that they generally pass over, or in close proximity to, the Banks of Newfoundland, and on account of the facilities offered by telegraphic land reports for foreseeing their probable course from the interior or western

portion of the continent. Following the appearance of a storm-area in the central valleys of North America, a minimum period of about three days is commonly allowed for its advance to the Maritime Provinces, at the expiration of which time the conditions favorable for fog would commence to develop over the Banks, and would continue about two days, or until the passage of the depression had caused the wind to again shift to westerly. This calculation allows a period of at least five days between the appearance of a cyclonic area over the interior of the continent and the time of greatest probable fog density over the Banks as resulting from its eastward movement. With this margin of time allowed forecasts of great interest and value could be made for the benefit of the shipping interests. Outward bound steamers could be forewarned of the probable presence of fog over the Banks in season to anticipate its presence on arrival in that locality, and vessels about to sail from British ports could have seasonable warning by cable. In cases of abnormal and unexpected rates of progression of storm-areas, or of rates of speed, on the part of vessels, insufficient to reach these longitudes in the time prescribed, a knowledge by shipmasters of the laws governing the circulation of winds within areas of low barometric pressure, and of the fact that with a shift of wind to the northwest quadrant, following the passage of a storm-centre, the fog-banks would dissipate, would enable them to determine, upon approaching the Banks, whether the anticipated conditions had developed or disappeared. If easterly or southerly winds and falling barometer were noted, it would indicate that the centre of the low barometric area was still to the westward, and fog might be expected; if, on the contrary, the wind had commenced to shift to westerly with steadily rising barometer, it would show that the storm-centre had passed to the eastward of the Banks, and an early disappearance of fog in that region might be calculated upon.

This subject is of vital importance to shipmasters, and will be pursued, not only in connection with the fogs peculiar to the Banks of Newfoundland, but also as relates to those which develop along the American coast in more southern latitudes.